



DYNO CHECKLIST AND POLICIES V.2 8/2023

Dyno Checklist

- You must bring your locking lug key, if applicable. The vehicle cannot be tested if we can't remove the wheels. We will not attempt to destroy/remove locking lug nuts if key is missing. If your lug nuts use a specialty tool, this must be provided.
- The Mainline ProHub AWD 4600 is a non-linked AWD hub dyno. If your vehicle is AWD, please ensure that this will not cause issues. The dyno will maintain perfect synchronous wheel speeds individually, but if you wish to test in 2WD mode, please make the necessary mechanical changes prior to arrival.
- If your car has a special dyno mode (common with newer vehicles), please have this process A) tested and B) ready for us when you arrive. We do not want to have to charge you to go online, browse forums, test random procedures, etc.
- Bring the required fuel for the dyno session and bring enough to last for the entire session. **FlexFuel vehicles must be brought in with NO MORE than 1/4 to 1/3 tank of 91/93 octane (pump gas).** This is so that we can blend upward and hit our target for high ethanol content. If you have too much gasoline in the tank, we cannot blend high enough.
- Please have the vehicle 100% ready for tuning at the time of the appointment. If the vehicle is not ready, and requires substantial time to make ready, we reserve the right to cancel your appointment and reschedule you to a later date.
- Oil should be changed and fresh before your appointment. Ensure no oil leaks are present.
- Please make sure your vehicle has a battery that is in good working condition and will hold a charge for extended periods with the key on, engine off. If we must stop to recharge your battery, there will be an additional fee. For drag cars that do not have an alternator, please bring your charger and all related cables, and be sure that the vehicle has an easily accessible battery or remote terminals.
- Make sure there is an easy place to hook up external MAP sensor(s). The dyno has two MAP sensors, each capable of reading 7BAR (87psi). These can be placed in any part of the engine that has a vacuum nipple available for hookup. If you want to monitor intercooler pressure drop both can be fitted before/after the IC but at least one of them are required for boosted applications in order for the dyno operator to safely test the vehicle. This also allows the boost pressure to be included on the printout.



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- Make sure that an easily accessible O2 sensor bung is present. This bung should be located AFTER the turbocharger and BEFORE the catalytic converter. The dyno has an NTK lambda (wideband) sensor that is highly precise and able to read very rich mixtures such as those typically found in engines running high ethanol content or methanol. This sensor also allows us to check your existing wideband O2 or tune the vehicle if your vehicle does not have a wideband. It also allows the wideband data to be included on the printout.
- Ensure the cooling system is properly bled, functions properly, and is free of leaks or air voids, and the thermostat is opening properly.
- Make sure the brakes on the car are in good condition and not dragging. With all the heat, noise, and air blowing in the dyno room it is not always easy to notice a dragging caliper right away.
- Check that all induction system components are free of leaks. Vacuum leaks and blown boost pipes are a common yet easily preventable issue and one of the #1 issues that lead to subpar results. Ensure blow-off valve is sprung properly and able to handle the target boost levels.
- Make sure that the exhaust system, including the turbocharger, has no leaks. Exhaust leaks play havoc with O2 sensor readings, causing issues with tuning. Exhaust components also get very hot and require a lot of time (to cool down) before work can be done on them, which can be costly if repairs need to be made on the dyno.
- Know what springs are in your wastegate(s) and make sure they are appropriate for what you are trying to do. You can NOT lower the boost below the wastegate spring. Example: if you have a 22psi wastegate spring, you cannot lower it to 15psi without changing the spring. Make sure the wastegate port(s) are installed correctly and extra ports are blocked off. Some wastegates have multiple bottom ports and top ports to aid easier hose routing, these unused ports cannot be left open or wastegate will not function properly!
- Properly establish your optimal boost control solenoid vacuum line routing. Two strategies are typically employed, top + bottom port style or bottom port style only. Top + bottom is best when your spring pressure is very low, but you want to be able to run high boost pressures still. Bottom only is better if the spring pressure is higher, say 15+ PSI. If unsure about this, please contact us.
- If you are running CO2 boost control, make sure you have a full bottle and that you have no leaks. Ensure the boost controllers are functioning properly and that line routing is properly configured between both valves.
- Ensure all vacuum hoses are in good condition and not split, cracked, leaking, or disconnected. Pay special attention to the fuel pressure regulator vacuum reference as this will cause an engine to lean out if it is not correctly connected.
- Supercharged vehicles please have a spare belt handy.



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- Ensure spark plugs are new, gapped properly, and of the correct heat range for your application. Ensure ignition system is new/fresh and able to tolerate high boost. Blowing out the spark happens at peak boost/torque and this cannot be overcome with tuning. Cars often hit very high loads on the hub dyno so even if it hasn't happened on the street, it might happen here. If your ignitions coils have more than 60K miles it is almost always a good idea to start with a fresh set.
- If using a MAF sensor, ensure the sensor has been cleaned, its o-ring is not torn, and the sensor fits snugly inside the pipe. On some aftermarket intakes this is a leak point which will almost always go unnoticed.
- When running a Speed Density (SD) tuning strategy, you must have an IAT sensor fitted inside the intake manifold or as close to it as possible, in the charge pipe.
- Ensure all wiring is up to par. All battery positive loads must be fused. High current loads should be passed through a quality 30A/50A relay. When joining wires together, use a permanent method such as crimping or soldering. Exposed joints or conductors must be covered with heat shrink or other appropriate harnessing material. Do not bypass or jump relays or fuses under any circumstance. Proper grounding is essential, follow your OEM diagram for factory-type wiring or your ECU manufacturer's guidelines if using aftermarket wiring.
- Ensure all sensors are reading correctly and properly. Scaling can be adjusted, but if a sensor is not reading properly, it may indicate a wiring issue, and wiring issues are time consuming and costly when done on the dyno. We are happy to work with you leading up to your appointment to ensure all devices are wired up properly and ready for tuning, or if you have any sensor wiring/placement questions.
- If running a standalone ECU, make sure that your ECU's data cable is easily accessible. Check that the ECU is running the latest most stable firmware. Test the ECU completely to ensure that all sensors are connected and mapped properly and that the base settings are sufficient to allow the vehicle to start, run, idle, and drive under their own power with no issues, prior to arrival. The tune does not need to be perfect, since that is what the appointment is for, but the basic configuration does need to be solid, this also helps you ensure that the other items in this checklist can be properly addressed before your appointment.
- If running a stock ECU that has a special flashing technique, such as a dongle, cable, or jumper wires, be sure that you have these items and that they have been tested and are working and licensed to your ECU, prior to arrival. Sometimes people buy these types of devices second hand and don't realize they are locked to another vehicle.



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Policies

- Please be on time for your appointment and communicate with us about your status in the hours leading up to your appointment. We ask that you also do not be too early, as we may be working on another project, and we do not have a customer waiting area in our office for you. 30 minutes is a good rule of thumb.
- PRE-DYNO SAFETY INSPECTION. All vehicles built outside our shop facility must undergo a pre-dyno safety inspection. The purpose of this is to put knowledgeable eyes on all key areas that may impact the safety of the dyno operator and equipment and identify them before it causes a problem. It also has a nice bonus of identifying configuration or mechanical issues that can/will save you money if they suddenly appear on the dyno. Inspection must be performed by authorized facility (SEE: APPENDIX A – AUTHORIZED FACILITIES). If the vehicle fails a pre-dyno safety inspection from an approved facility, BWT reserves the right to cancel the appointment (SEE: CANCELLATION/RESCHEDULING POLICY).
- DYNO VIEWING POLICY. Vehicle owner and 1 guest are permitted in the dyno viewing area only, with signed waivers (SEE: LIABILITY RELEASE, WAIVER, AND AGREEMENT FOR DIAGNOSTIC TESTING EQUIPMENT USE).
- FLIMING AND SOCIAL MEDIA POLICY. You are permitted to take photos and videos for personal use, but please do not share media of other vehicles, parts, or projects going on in the shop area. Similarly, if you do not wish to have your vehicle shared on our social media account(s), please let us know up front.
- DEPOSIT POLICY. Dyno appointments are reserved/confirmed with a \$275 deposit. This will be applied to your final billed amount at the end of your appointment, with some exceptions (see CANCELLATION/RESCHEDULING POLICY and NO-CALL, NO-SHOW POLICY)
- CANCELLATION/RESCHEDULING POLICY. All cancellations or rescheduling requests must be provided in writing via text or email 48 hours in advance or your deposit may be forfeited, at our discretion. If cancellation notice is properly given, your deposit will be retained in the event you wish to reschedule, or it may be refunded if you wish to cancel. If your vehicle fails a pre-dyno safety inspection from an authorized facility, we reserve the right to cancel your appointment in which case the deposit will be refunded.
- NO-CALL, NO-SHOW POLICY. If you do not show up for your appointment and do not call, text, or email 48 hours in advance, your deposit will be forfeited and deemed nontransferable. Any subsequent rescheduling requests following a NC/NS may be subject to 100% upfront payment for the entire planned scope of work (while still subject to the additional non-dyno work policy).



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- **ADDITIONAL, NON-DYNO WORK POLICY.** Any additional work outside of the quoted tuning rate or dyno rental rate will be billed at our hourly shop rate. Unforeseen things can and do happen on the dyno, so please budget and plan accordingly. If we discover mechanical changes that are needed to complete tuning, we will pause and discuss with you prior to proceeding, and these will be billed at our hourly shop rate.
- **PAYMENT POLICY.** We accept cash, check, or credit cards. Credit cards will be assessed a 3.5% processing fee. Payment in full is required before the vehicle is released for pick-up.
- **PICK-UP POLICY.** We will be in communication with you as we are near the point where your vehicle will be ready for pick-up. All vehicles must be picked up by close of business, no later than 2 hours from the communicated pick-up time and date. The only exception is if we offer to store the vehicle overnight, in which case it must be picked up the following day before 9AM. If the vehicle is not picked up by the established date and time, a \$150 per day storage fee will be assessed. Overnight storage is offered and reserved solely at our discretion. These measures are not designed to be punitive, they exist due to the fact that as we are a small shop and space is at a premium and there is often not enough room to store extra vehicles.
- **HOURLY SHOP RATE.** \$125/hr billed at 0.5 hour minimum.
- We want to make sure that your dyno experience is successful, safe, efficient, and rewarding. **We do not want to charge extra for things which could have been prevented**, so please do your best to go the extra mile in preparation for your session.
- Please be transparent and open about the car. **Not knowing exactly what we are working on or not getting the full story will make for a more difficult and potentially more costly experience.** This is a judgment free zone, we only want the best result for your vehicle, we have no interest in putting anyone down. All of us are learning and trying to improve, no matter how much knowledge or experience we have.
- If you have any questions, we are happy to help answer them, so please reach out as much as you like leading up to your appointment date.

By signing below, I confirm that I have read, understand, and agree to these policies.

Print Name: _____

Signature: _____

Date: _____

Year, Make, and Model: _____

Check box to confirm locking lug key present inside vehicle (if applicable)



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APPENDIX A

Authorized Facilities for Pre-Dyno Safety Inspection

Misfire Motorsports

13746 N. Lincoln Blvd

Edmond, OK 73013

(405) 919-8404

misfiremotorsports@gmail.com